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Anaheim Comprehensive Standing Orders Project

A joint study between Orange County Emergency Medical Services, Anaheim Memorial Medical Center, and Anaheim Fire Department

Report by Emergency Medical Services, Health Care Agency

Executive Summary

Comprehensive standing orders for paramedics were evaluated in the area of the Anaheim Fire Department and Anaheim Memorial Medical Center Base Hospital. The study began in May, 1996, and continued for three years, nine months. Initially, little base contact was required, and these criteria were subsequently revised twice, once on July 1, 1998, and for a final time on October 1, 1999. Monthly chart audit and numerous studies, including comparisons to base contacted calls, were examined.

Base contact reached a low of 1.4%, but rose to 6% with the second revision, and 16-26% with the third revision. There were few deviations from care consistent with Orange County treatment guidelines that could significantly impact patient outcome, 1.4%-3+% at the beginning, and 0.4-1.2% at the end of the study. While this number is a small total number, it is a much larger fraction of the acute/critical calls when care is more likely to be important.

Audited trends seen initially included: 1) Incomplete documentation that later improved; 2) less treatment compared to similar base contacted calls throughout the county (e.g. venipuncture/intravenous line starts and blood glucose testing); 3) incorrect dosage, timing, and/or sequence of medications, especially during full arrests and in the treatment of acute respiratory patients.

Areas identified needing further review during the study included: 1) Data collection issues, 2) Quality Improvement (QI) issues, 3) the changing role of the Prehospital Care Coordinator, and, 4) paramedic receiving center perception and response.

Recommendations

1. Paramedics safely and effectively perform patient assessment and offer appropriate advanced life support interventions independent of base contact in the majority of calls.

2. The study identified specific patient complaints that could be better managed if on-line medical control is provided. Standing orders should be limited in these patient complaints (e.g. respiratory, severe allergic reaction, shock states, and other complicated or difficult cases.)

3. Utilize vital sign parameters to identify patients in the field that may require base contact and intervention.

4. Standing orders should be expanded countywide to other paramedic agencies.

First Study Phase Period: 5/1/96 – 10/31/96

In May of 1996 Orange County EMS, Anaheim Memorial Medical Center, and Anaheim Fire Department began a joint project to study and evaluate the appropriateness and accuracy of paramedic utilization and documentation of comprehensive standing orders. The objective was to provide indicated care to the prehospital patient without base hospital contact.

Comprehensive Standing Orders or CSOs are all medications and interventions included in the Orange County Emergency Medical Services Agency Treatment Guidelines which paramedics could perform independent of medical direction from a base hospital. During the initial phase of the study, only the following interventions required on-line medical control:

- Needle thoracostomy
- Morphine sulfate for respiratory distress
- Adenosine
- Diazepam (this medication was changed to a CSO on August 12, 1996 for the duration of the study)

The prehospital care report (PCR) and the base hospital report, in the event of base contact, were reviewed by the Anaheim Memorial base coordinator and compliance to the Orange County Treatment Guidelines were noted. Identified deviations were categorized as either "significant" for an adverse outcome or high potential for adverse patient care impact, or "non-significant" no or minimal patient care impact.

For this study period only, paramedics completed a Paramedic Trial Form and the receiving hospital completed a Paramedic Receiving Center Trial Study Form as well. In addition, for this study period only, those cases categorized by the initial responders as basic life support (BLS) only were reviewed by the Anaheim Fire Department paramedic coordinator. All deviations were identified by the Anaheim Memorial Medical Center prehospital care coordinator and then additionally reviewed by the base hospital medical directors and OCEMS staff.

During the initial six-month study period, there were 5,848 medical aid calls (2,949 BLS and 2,899 ALS). Base contact was initiated by paramedics in only 88 cases (3%).

Results of ALS Call Review

1. Indicated care and comprehensive standing orders initiated utilizing current EMS guidelines (91.5% compliance).
    - Non-significant deviations 7.3%.
    - Significant deviations totalled 1.2%.
2. PRC notified of patient arrival in adequate amount of time (98.6%).
3. Paramedic field assessment matches PRC staff initial assessment (99%).
4. Patient triage/transported to indicated PRC per EMS policy (98.2%).
5. Cell phone communication with PRC successful (97.3%).
6. PCR documentation includes rationale for care given (92.3%).
7. Documentation for all medications given is appropriate (range 71% at start of study to 99.6% at end of study).

8. Response to all interventions while 902-H or 10-97 is documented (94%).

9. The paramedic team felt prepared in applying care under CSO (100%).

BLS Call Review

10. The three audited criteria met the study criteria in all cases. These included the chief complaint and assessment findings are consistent with a BLS condition, that no ALS interventions were indicated, and the patient accepted the BLS–level treatment.

Summary of Findings/Trends of Calls with Concerns Identified

- Documentation gradually improved from the start of the study (88% - 94%) and maintained a high compliance rate for the remainder of the project.

- Not establishing an IV access when indicated occurred 84 / 2899 (2.8%).

- Not performing field blood glucose level when indicated 57 / 2899 (1.9%).

- Medications indicated but not given included: adenosine, albuterol, diphenhydramine/epinephrine, dextrose, glucagon, lidocaine, furosemide, nitroglycerin.

- Dosage or timing of medication was not always consistent and was at times identified as an area for review. This was particularly noted in full arrests, and in treatment of acute respiratory patients.

Analysis-First Study Phase

Patients in the comprehensive standing orders project during the first phase received care consistent with EMS guidelines. Indicated care was initiated for a high percentage of the calls and the majority of concerns had no or minimal patient care impact, with a small percentage evaluated as significant. Paramedics felt they were prepared in applying care under CSO without Base Hospital direction. In addition, the PRCs were prepared for patient arrival without prior notification by the Base Hospital. Base contact occurred less frequently than anticipated.

While the number of significant deviations was small, it was recognized that the vast majority of the calls were routine in nature, and that the significant deviations comprised a much larger fraction of either the acute calls or the calls that required less frequently used assessment or treatment skills. The study was continued while the first six months of data were analyzed.

Findings: The total number of Basic Life Support (BLS) calls reviewed was 2949. Of all calls reviewed, 31 or 1% were identified as possibly needing a higher level of care (potentially needing ALS intervention or monitoring).

Second Study Phase: 11/1/96 – 6/30/98

While the data from the initial six-month study period were examined, Anaheim Fire Department paramedics continued operating under CSOs, and Anaheim Memorial Medical Center continued as a paramedic resource center and provided QI and education resources.

During the second study phase, three areas were examined: 1) the effect of CSOs over a longer period of time - would compliance and familiarity with protocols, and other characteristics change over time?, 2) selected clinical conditions were examined, 3) a comparison was performed with on-line medical oversight at the traditional bases.

The information from the second study phase is summarized in two groups below, first the brief summaries of individual audits and then the overall ALS call summary for the period.

STUDY SUMMARIES

Base Pilot Subset Study – Acute Medical (August – October, 1996)

Comparison between non-contacted CSO calls and contacted calls at base hospital both prior to and after contact.

Analysis of treatment and documentation of patients classified as Acute Medical	**Assessment Adequate**	**S.O. compliance to OCEMS guidelines**	**Treatment matches assessment**	**Patient appropriately field triaged**
Non-Contacted Calls (N = 71)	99%	70%	90%	100%
Contacted Calls (N = 74)	99%	89% (prior to contact) 65% (after contact)	95%	97%
Analysis	Lower compliance to OCEMS guidelines in contacted calls probably due to variation in base hospital treatment guidelines that allow deviation from protocols based on physician judgement. Also noted was difficulty in appropriately assessing and treating acute respiratory patients in the field.			
Recommendation	Study specific subsets of patients (specifically Cardiac Arrest and Respiratory)			

Comparative Study of Full Arrests

Full arrests w/o base contact & full arrests w/ base contact.

Base Pilot Subset Study **Full Arrests**	**Number of patients**	**Was treatment and documentation appropriate to OCEMS guidelines?**	**Analysis**
Subset Study A – CSO (Calls made – Sept. 1996)	N = 71	83% w/o base contact	Identified a need for focused education on dysrhythmias and treatments
Subset Study B – Base Contact (Calls March – April 1996)	N = 63 (from other 6 bases)	78% prior to base contact 89% after base contact	Treatment was appropriate for both groups and differences were believed to be due to poor documentation and problems in rhythm recognition by paramedics

Base Pilot Subset Study – Respiratory (Calls from January – September, 1996)

Comparison between CSO non-contacted calls and base contacted calls.

Base Pilot Subset Study **Respiratory**	**Number of patients**	**Was treatment & documentation appropriate according to OCEMS guidelines?**	**Potentially significant deviations for those not meeting guidelines.**
CSO	N = 60	87%	50%
Base Contacted	N = 66	71%	5%
Analysis	Detailed chart reviews showed a much smaller number of potentially significant fallouts by base contacted calls despite the study findings of greater deviation from OCEMS guidelines. Field assessment and treatment was problematic for both groups and in the fallouts, treatment included combination drug modalities. Base intervention included nitrates and morphine more frequently.		

EMS Base Pilot Comparative Study (Calls from June, 1996)

Base and CSO Comparative Study	**Number of patients**	**Scene time average**	**Overall number of interventions**	**IV attempts**	**EKG Monitor**	**Number of dextrostixs**
CSO	300	14 mins 25 secs	1.7 per pt	51%	73%	24%
Base Contact (6 Bases)	300	15 mins 3 secs	2.6 per pt	80%	83%	33%
Analysis	The above practice pattern differences were identified. Differences between CSO calls and Base Contact calls were small in scene time with a difference of 38 seconds. Number of interventions were higher with Base Contacted calls and lower with CSO calls. Unable to determine impact on patient outcome, recommended looking at subsets and outcomes.					

Prospective Base Comparative Study (March, 1997)

This prospective study was completed by the base hospitals to determine if base contact affects treatment and outcome of the EMS patient. Method: Chart review, survey and interviews. Findings are as follows:

Indicator	Results
Paramedic assessment/treatment appropriate	98%
Base ordered treatment anticipated by paramedics	96%
Areas identified with inappropriate assessment, treatment, or requests for treatment by paramedics	Respiratory Altered Level of Consciousness Symptomatic Cardiac Hypotension
Analysis	Findings suggested that prehospital personnel had difficulty in assessing and treating complicated acute medical populations of patients such as acute respiratory.

The Orange County prehospital care coordinators, following the study, recommended that base contact should be required for respiratory patients, cardiac patients with abnormal vital signs or symptomatic arrhythmias, cardiac arrests with changing rhythms, hypotension/shock states, and unclear or mixed presentations. They also recommended in-depth scenario-based education in selected areas as well as scenario based competency skills review annually, and that trauma and neuro triage criteria should be more objective and combined into a single policy.

Two other studies performed during this time period are not presented in tabular format. First, OCEMS performed an analysis of moderate trauma victims triaged to paramedic receiving centers rather than trauma centers between May–October, 1996. This included eighteen patients. The finding was that all cases were triaged appropriately and no PRCs received critical trauma victims (CTVs). Second, specific use of atropine was examined. The contacted calls were more likely to receive atropine for non-cardiac arrest heart block, but there were no major differences in the two groups.

Finally, OCEMS examined 600 base contacted calls from June 1997, 100 calls from each base except Anaheim. A total of 81/600 deviations from protocols were identified (13.5%), but none (0/81, 0%) were labeled as potentially significant. All were classified as non-significant. The conclusion was that while bases commonly order deviations from care, they were judged medically appropriate.

ALS CALL SUMMARY – SECOND STUDY PHASE

Anaheim Memorial and OCEMS continued to audit ALS calls after the end of the 6-month initial phase of the project. Indicators included the total number of ALS and BLS calls, number of base contacted calls, indicated care initiated, impact of care on the patient for treatment indicated but not performed (minimal v. potentially significant), and appropriateness of documentation. These results compare the first 6-month phase and the second study phase (20 months):

Indicator	May – Oct 1996 average/month (Totals)	Nov 96 – June 98 Average/month (Totals)
ALS Calls	482 (2889)	534 (10,687)
Base Contacted Calls	88 (3%)	154 (1.4%)
Indicated Care Initiated	91.5%	95%
Deviations with – Minimal Impact	7.1%	3.5%
Deviations with – Potentially Significant (EMS review)	1.4%	1.3% (1.6%)
Documentation Appropriate	92%	95%

Review criteria included:

1. Provided care complied with OCEMS guidelines.
2. Standing Orders according to OCEMS guidelines.
3. Documentation is clear for care given.
4. None or minimal patient care impact on indicated care that was not given.
5. Potentially significant patient care impact on indicated care that was not given.

Summary of Non-Compliance Trends (Areas of Deficiencies)

1. Documentation omissions.
2. Dextrosticks not completed.
3. IV access indicated – not done.
4. Fluid challenge indicated – not done.
5. Medication errors (i.e. wrong dose/wrong drug/wrong route/timing).
6. NTG given before blood pressure taken.
7. Oxygen discontinued inappropriately.
8. Medications indicated but not given.
9. Incorrect sequencing of drugs or treatment.
10. Incorrect dosing intervals (i.e., timing).
11. No base contact made when required by study design.

Third Study Phase: 7/1/98 – 9/30/99

On July 1, 1998, following discussions with Anaheim Memorial Medical Center personnel (prehospital coordinator, base hospital physician, and medical director), Anaheim Fire Department personnel, and Orange County EMS personnel, new base contact criteria were instituted. Changes were instituted to clarify for the paramedics when base contact should be made to improve compliance in utilizing base contact when appropriate. These changes were based on areas as identified by the studies.

BASE CONTACT CRITERIA/STANDING ORDERS GUIDELINES (beginning July 1, 1998)

UNSTABLE PATIENT – All acute patients who do not respond to initial treatment, and patients who deteriorate during the call from moderate to acute status. (Except trauma and calls with short ETAs).

BASE CONTACT FOR:

- Adenosine
- Morphine Sulfate for Respiratory Distress
- Needle Thoracostomy
- Anytime Medical Direction is desired

Full Arrest and Post Full Arrest Patients

May use county-wide standing orders

No contact for 914-C or Respiratory Arrest

Allergic Reactions

Contact on Moderate or Acute Status

No contact with Mild Status or Dystonic Reactions

Respiratory Distress

Contact on Moderate or Acute Status

No contact with Isolated Asthma, COPD, Lung CA, or Airway Obstruction

Symptomatic Arrhythmia

Contact on Acute Status Symptomatic Arrhythmia not responding to first line of treatment

Abnormal Vital Signs

Contact on Acute Status where a treatable cause is not readily identifiable

Abnormal or Complicated Childbirth

Contact on premature births and viability issues

No contact on routine labor and delivery, vaginal bleeding, or premature labor

MVIs

Contact for coordinated disposition only

Undetermined Chief Complaint or Unclear Presentation

Contact with Acute Status patients

Triage Decisions

Contact on Consent Problems, ALS Refusal with question of capacity, and Uncertain Destination

Reasons Reported by AMMC for Base Contact beginning July 1st 1998

1. MS for respiratory distress
2. Adenosine
3. Needle Thoracostomy
4. Full Arrest
5. Severe Allergic Reactions
6. Respiratory Distress
7. Symptomatic Arrhythmia
8. Abnormal Vital Signs
9. MVI
10. Undetermined complaint or unclear patient presentation
11. Triage decision
12. Other (diazepam order/respiratory arrest/field pronouncement/IFT/mental capacity concerns/new trainee)

SECOND STUDY PHASE – THIRD STUDY PHASE COMPARISON FOR 1998

The review of 1998 ALS calls continued as shown below.

Indicator	Jan – Jun 1998 Average (Total)	Jul 98 – Dec 98 Average (Total)
ALS Calls	585/mo (3511)	578/mo (3470)
Base Contacted Calls	51 total (1.5%)	216 total (6.2%)
Indicated Care Initiated	96.2%	99%
Minimal Impact	2.6%	0.7%
Potentially Significant (EMS review)	1.2%	0.5%

Base contact increased with the new criteria from under 2%, to about 6%. At the same time, the number of potentially significant deviations diminished. Findings suggested that with increased base contact there was an increase in care delivered by paramedics that was indicated and appropriately

initiated in the field. In addition, those patients that were identified as deviations with minimal or potentially significant impact on patient care decreased.

Further review revealed the paramedics experienced some difficulty in applying the base contact criteria and it was determined to review and revise them. Complaints focused on the subjective nature of the criteria and it was decided that the contact criteria should be more objective.

Fourth Study Phase: 10/1/99 – 1/31/2000

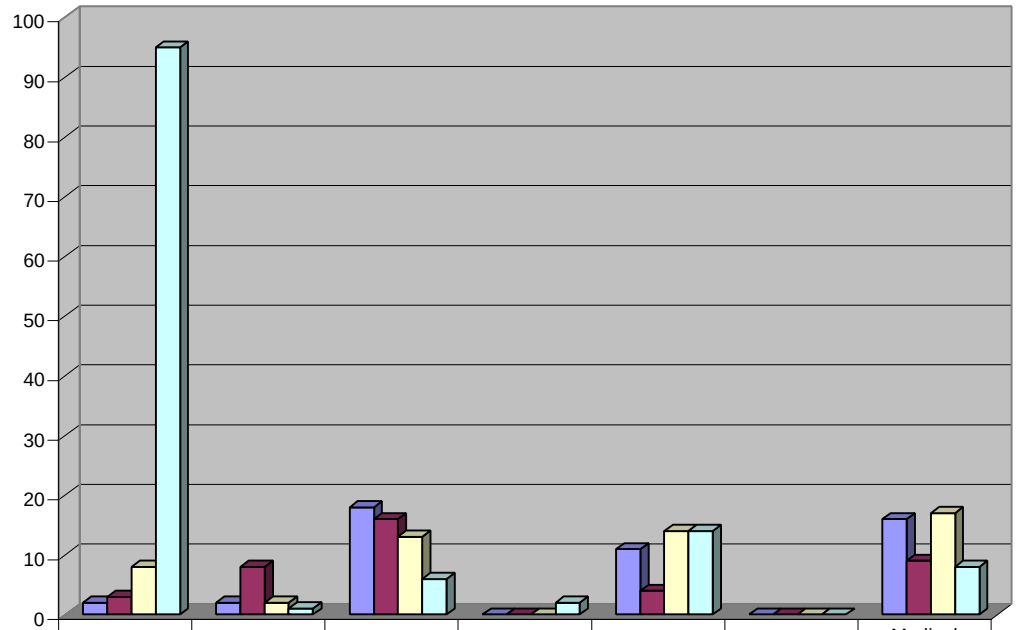
Continued review of the Anaheim ALS PCRs demonstrated a need for more objective criteria. The proposed criteria were discussed with personnel from Anaheim Memorial and Anaheim Fire Department and were put into effect on October 1, 1999. The final criteria were:

- Abnormal vital signs
  - Adults
    - Systolic BP < 90
    - HR < 50 or > 130
    - RR < 12 or > 26 (except known narcotic overdose)
  - Pediatrics (newborn to < 12 years)
    - RR < 12 or > 50 or age appropriate
    - HR < 60 or > 200 or age appropriate
- Anaphylaxis
- Acute status respiratory distress
- Complicated labor/childbirth
- Full arrests
- Needle thoracostomy
- Anytime medical direction is needed
  - Undetermined chief complaint or unclear presentation
  - Triage decisions (consent issues, ALS refusal w/question of capacity, uncertain destinations)
  - MVI if coordinated patient disposition is required
- Interfacility transports

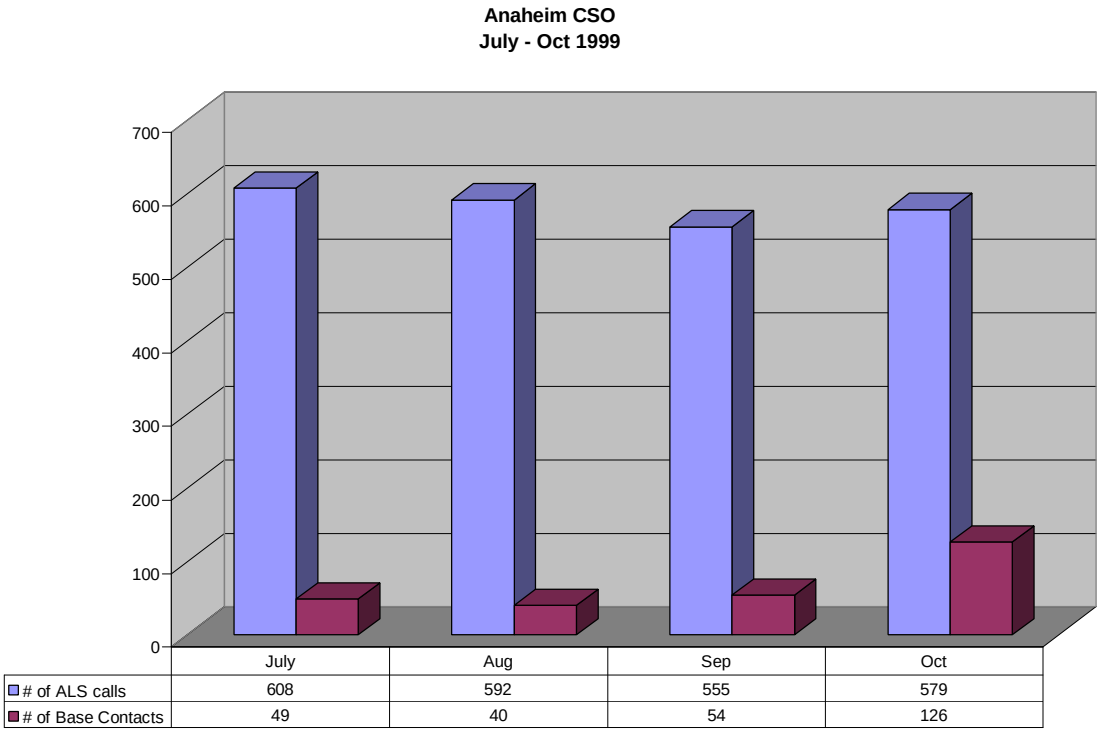
The audit process during this study phase was changed so that all ALS PCRs were also reviewed by OCEMS personnel, including the ALS coordinator and medical director. Previously, they reviewed only the non-significant and significant deviations as identified by Anaheim Memorial. There was a recognition that the judgments about what constituted a significant deviation were subjective and might vary considerably from one evaluator to another.

The figures below demonstrate graphically that there was a large increase in the number of base contacted calls using the new criteria and that these were largely in the area of abnormal vital signs (see figures).

Anaheim CSO
Reasons for Base Contact
July - October 1999



	Abnormal VS	Allergic Rxn	Resp Distress	Labor/Delivery	Full Arrests	Needle Cric	Medical Direction
July	2	2	18	0	11	0	16
Aug	3	8	16	0	4	0	9
Sep	8	2	13	0	14	0	17
Oct	95	1	6	2	14	0	8



	July	Aug	Sep	Oct
# of ALS calls	608	592	555	579
# of Base Contacts	49	40	54	126

ALS Call Summary (October 1999 to January 2000)

Data from Anaheim Memorial Base with Separate OCEMS – Judged Significant Deviations

Indicator	Oct	Nov	Dec	Jan	Total
ALS Runs	579	568	737	586	2470
Base Contacts	126 (22%)	132 (23%)	190 (26%)	131 (22%)	579 (23%)
Significant Deviations (AMH)	2	0	3	4	9
Significant Deviations (OCEMS)	14	2	8	6	30

Patient Assessment Categories with significant deviations included:

Respiratory – 10
Hypotension – 6
Chest pain – 5
ALOC – 4
Cardiopulmonary Arrest – 3
Allergic – 1
Syncope – 1

The evaluation did show that OCEMS personnel judged a much larger number of the deviations as being significant. The significance of these differences in judgment is unclear. The only way to reconcile these differences would be to develop objective criteria that can be applied by anyone, removing the subjective component. The categories in which the deviations occurred are consistent, however, with those seen since the beginning of the study, namely respiratory, shock states and others.

Fifth Study Phase (2/1/2000 – Present)

At the current time (pending the review of the entire study in this report), routine monitoring is occurring at Anaheim Memorial Medical Center. Recent data are outlined below:

Indicator	April 2000 Totals
# of ALS Calls	598
Contacted Calls	93 (16%)
Overall Compliance	573 (96%)
None/minimal impact	18 (3.1%)
Potentially significant	7 (1.2%)

Reasons for Base Contact:

Abnormal Vital Signs	63	(68%)
Full Arrest	19	(20%)
Acute Status Respiratory	8	(9%)

Appropriateness of Care/Areas of Indicated Care not given:

Base Contact indicated – 16
Dextrostick – 1
Rectal midazolam given – 1
Atropine in V-Fib (base order) – 1
Additional NTG indicated – 2
Diphenhydramine indicated – 1
O2 dc'd inappropriately - 1

Observations

Over a prolonged period of observation, the findings remained relatively stable.

Personnel changes, including a new prehospital care coordinator at Anaheim Memorial Medical Center and the move of the previous prehospital care coordinator to the fire department, occurred halfway through the project. This changed the dynamics of the study but did not impair the completion of the study or the results.

Data issues include:

1. Differences in the reported number of ALS calls and the submitted number of ALS calls.
2. Reported number of base contacted calls by Anaheim Memorial differs from the number of Anaheim base contacted calls reported by other bases.
3. Duplicate PCRs received when sent directly from the Fire Department.
4. Contacted calls double entered into OCEMS database by contacted base hospital and Anaheim Memorial.
5. EMS received some PCRs that AMH Base did not receive.

QI issues include:

1. No opportunity for the MICN to provide input to PCC regarding assessment, interventions, and triage if a non-contacted call.

2. Decreases the paramedic/MICN/base hospital physician relationship.

3. Problem resolution more difficult on the contacted calls involving another base.

4. Increase time commitment for QI follow-ups.

5. PCC is the sole primary reviewer.

6. Case review by base hospitals and EMS personnel are subjective and open to differences in interpretation and judgment.

Other issues identified include:

1. Prehospital Care Report becomes primary source of data.

2. Potential for fragmentation of medical oversight.

3. Modifies the role of the PCC to include thorough review of 100% of charts with prompt and comprehensive follow-up when indicated.

4. In order to effectively monitor the system, fire departments would need a commitment to the project and assure compliance to CSO guidelines.

5. Potential PRC physician involvement on field patient care issues and triage if link to base hospital personnel is weakened.

6. Problem identification and problem resolution must be clearly identified and addressed to all participants.

Conclusions:

- Paramedics can operate safely and effectively under extensive standing orders.

- Advantages include allowing two medics to concentrate on patient care and may result in some minimal decrease in field time. Although not evaluated directly in the study, undoubtedly increases MICN hours that could be devoted to providing patient care.

- Certain clinical conditions (e.g., respiratory distress, allergic reactions, shock) benefit from base hospital intervention. The majority of ALS calls result in few interventions by paramedics, and require minimal decision making. As a result, the overall number of significant deviations from appropriate patient care is small. When reviewing and comparing deviations with the acute medical calls, which require appreciable decision making, the deviations are a higher fraction.

- Field personnel in the presence of a patient have a different perception of the immediate need for ALS procedures. This results in fewer routine procedures such as intravenous starts. The effect of bypassing these interventions on selected patients is unknown, but given the current EMS research base, it may be an appropriate decision by field personnel. Hospital personnel may have an unneeded bias toward additional field treatment.

- In order to minimize confusion and improve compliance, CSOs should address a limited number of interventions.

Recommendations:

1. Additional standing orders should be used throughout the EMS System.

2. Moving abruptly from minimal standing orders to extensive standing orders is disruptive and overly abrupt. Countywide standing orders should begin with a limited expansion from the current pre-base contact orders.

3. Comprehensive standing orders should be expanded to other fire prehospital provider agencies based on their resources, interest in participation, system impact and commitment. Implementation should occur department-by-department rather than countywide due to data collection and training issues.

Acknowledgments:

This study was only possible due to the professionalism and patience of the paramedics of the Anaheim Fire Department. Their ability to consistently deliver excellent care and to adapt to changes in the criteria reflected their commitment. Our thanks also to Fire Chief Jeff Bowman and Operations Chief Roger Smith. Denise Mitchell, RN, served both as the Paramedic Coordinator at the Anaheim Fire Department, as well as the first Prehospital Care Coordinator at Anaheim Memorial during the study.

Also, thanks to Anaheim Memorial Medical Center for its contribution to the Orange County community by providing physician and nurse leadership in its support of the EMS System. The base hospital responsibilities were handled ably by Mary Massey, RN, Prehospital Care Coordinator, Stephen Groth, MD, Base Hospital Medical Director, and Tim Korber, MD, EMS Liaison Physician.

And, finally, thanks to the other base prehospital care coordinators who performed a number of the evaluations critical to this project, and provided advice and insight.

APPENDIX

If another fire ALS provider agency expresses an interest in utilizing comprehensive standing orders and limited on-line medical control, the following procedure describes the responsibilities the fire agency must follow.

Proposed Comprehensive Standing Order Procedure

The following QA matrix describes the procedure for establishing a county wide comprehensive standing order protocol for those fire agencies with a written EMS approved QI plan.

Definition: All QI activities will be considered confidential. Any ALS call utilizing standing orders, paramedic escorted, AMA, or field pronouncements.

Procedure: All PCRs will be completed by the paramedics and sent to the assigned base hospital by the fire agency within a reasonable time period as mutually determined by the fire agency, base hospital and OCEMS.

Responsibilities

I. Fire Agency

A. Paramedic

1. Completes PCR at time of call according to OC EMS guidelines.

B. Fire Station

1. Sends yellow/pink copies of PCR to the assigned base hospital daily (weekends & holidays to be sent on next business day).

C. Designated Fire Representative

2. Batches yellows/pink copies by date & time of occurrence; put into logistical sequence.

3. Check PCRs against fire department activity log to confirm inclusion of all calls.

II. Base Hospital

A. Prehospital Care Coordinator

1. Reviews 100% of all ALS calls (utilizing the yellow copy of the PCR).

2. Identifies medical care concerns of the following:

a. Any deviations from OCEMS treatment guidelines.

b. Questionable or unusual calls.

c. Care indicated but not given.

d. Inappropriate field designation triage.

3. Documents medical fallouts for physician review.

a. To base physician liaison and/or medical director with copy of PCR; physician identifies impact as non-significant or significant; reviews significant fallouts with ED physicians at assigned base.

b. Reviewed by BHP for comments and standardization.

4. PCC tracks fallouts by fire provider agency and communicates findings with paramedics and provider agency.

5. Provides continuing education based on fallouts.

6. Copy of Base QA log and PCR to EMS including patient disposition/outcome on potentially significant fallouts.

III. EMS Responsibilities

A. Medical Director and/or designee reviews fallout log and PCRs.

QI Process

I. Base Hospital Role

A. Prehospital Care Coordinator

1. Notifies fire department paramedic coordinator of all fallouts on monthly basis or more frequently as needed.

a. Suggest PCC and fire agency representative meet monthly to review fallouts and any other appropriate calls.

2. Methods of follow up (any or all can be utilized):

a. One-on-one in person or phone with medic and PCC on all significant fallouts.

b. Written memo to involved paramedics.

c. Newsletter to prehospital providers.

d. Education (tape review, lectures, skills review, video, quizzes) for remediation if necessary.

e. E-mail notification to involved paramedics.

3. Identify trends and/or system problems.

a. Notify base physician.

b. Notify fire providers.

c. Prepare summary report to notify EMS, RPAC, EMS Fire Chiefs, CPAC, QAB.

4. Potentially serious medical-legal incidents shall be reviewed with base physician liaison and appropriate fire agency representatives as soon as possible with written notification to EMS.

II. Fire Agency Role

A. Paramedic Coordinator

1. Review all identified potentially significant fallouts according to their internal QI plan.

B. Fire Department

1. Support base as a medical control point.

2. Remedial action plan will be at the discretion of fire agency if indicated.

III. OCEMS Role

A. Review and recommend resolutions for any identified system trends via QAB.